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Pacific railroad of Missouri.
Annual report. 1st, 1850/51

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FIRST ANNUAL RE

OF THE

BOARD OF DIREC

OF THE

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REPORT OF THE CHIEF ENGI

UPON THE

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BOARD OF DIRECTORS FOR 1850.

JAMES H. LUCAS.
DANIEL D. PAGE.
GEORGE COLLIER.
EDWARD WALSH.
THOMAS ALLEN.
JAMES E. YEATMAN.
LUTHER M. KENNETT.
LOUIS A. LABEAUME.
JAMES HARRISON.

THOMAS ALLEN,
President and Treasurer.

JAMES H. LUCAS,
Vice President.

JAMES P. KIRKWOOD,
Chief Engineer.

BOARD OF DIRECTORS AND OFFICERS FOR 1851.

JAMES H. LUCAS.
EDWARD WALSH.
THOMAS ALLEN.
LUTHER M. KENNETT.
LOUIS A. LABEAUME.
JAMES E. YEATMAN.
JAMES HARRISON.
HUDSON E. BRIDGE.
EDWARD HAREN.

THOMAS ALLEN,
President.

JAMES H. LUCAS,
Vice President.

ROBERT SIMPSON,
Treasurer.

A. S. MITCHELL,
Secretary.

JAMES P. KIRKWOOD,
Chief Engineer.

MEETING OF THE STOCKHOLDERS

OF THE

PACIFIC RAILROAD COMPANY.

The annual meeting of the stockholders of the Pacific Railroad Company, in accordance with the charter of the Company, convened pursuant to public notice at the Merchants' Exchange, in the city of St. Louis, on Monday, the 30th March, 1851, for the purpose of acting upon the amendments to the charter, electing directors for the ensuing year, and for the transaction of other business, when, on motion, A. B. CHAMBERS, Esq., was appointed Chairman, and GEORGE R. TAYLOR, Esq., Secretary.

The President of the Company, THOMAS ALLEN, Esq., made the following report from the Board of Directors:

OFFICE PACIFIC RAILROAD COMPANY,
St. Louis, March 31, 1851.

In pursuance of the requirements of the charter, the Board of Directors respectfully submit to the stockholders the following exhibit of the affairs and condition of the Company:

It will be recollected that the preliminary organization of this Company took place on the 31st of January, 1850, at which time and occasion the eleven corporators present pledged themselves to subscribe for $154,000 of the stock.

On the 4th of February following, a book was opened at the Merchants' Exchange in this city for subscriptions to the stock, and during the period the book was kept open at that place, and others circulated in the several wards of the city, 4,416 shares were subscribed.

On the last Monday in March following, the Board of Directors were elected as prescribed by the charter, and after considerable inquiry and correspondence in relation to a suitable engineer, they succeeded in obtaining the services of Mr. James P. Kirkwood, then of New York, as Chief Engineer. Upon his arrival here, the Board instructed him to survey the most practicable route to the western boundary line of the State, including the Merrimac Valley route, crossing the Gasconade and Osage rivers south of Jefferson City; and subsequently the Missouri river route as far as Jefferson City, and also a line from the main line, near Cass county, to the Missouri river, near the mouth of the Kansas. Under his charge and direction the preliminary surveys were commenced, with two parties, on the 24th of May, and subsequently another party, for a short time, was added, and all the field work was closed on the 29th of November.

The results of these surveys are embodied in the report and maps herewith submitted for the information of the stockholders. The report was completed in January of this year, after which the Chief Engineer was dispatched to Washington city on business of importance to the company.

The report itself shows the great extent of the work accomplished by the Engineer Department, and furnishes internal evidence of the intelligence and ability with which it has been conducted. It has comprehended a general examination of the country, and an instrumental survey of three routes to the Gasconade river, viz: 1st, by the Merrimac Valley; 2d, by Union Ridge; 3d, by the Missouri Valley, with continuation condensed into two routes to Jefferson City—one route crossing Osage river south of Jefferson City, and passing by Versailles, and surveys continued to State line in Cass county, and also by Independence to Kansas. These surveys have embraced an extent of country of over three hundred miles in length, and of from twenty to thirty miles in width, and the aggregate length of the different lines is 825 miles.

To meet the expenses of these surveys, the Board of Directors, in May, made a call upon the stockholders for an instalment of five per cent. upon their subscriptions, two and a half of which was made payable on the 1st of June, and two and a half on the 1st of August, 1850. The instalments were paid by the stockholders generally, with encouraging promptitude.

The total amount collected of these instalments, as will appear by the Treasurer's report, is $24,517 50.

The total amount unpaid is $2,687 50.

Of these arrears it is believed, that nearly all are collectable, and it is the intention of the Board, at a proper time, to resort to those means which are given by the charter to enforce payment with interest. In the meantime the delinquents are not entitled to vote in the company.

The total amount expended during the past year for instruments, outfits, engineering, rent, &c., is $20,056 65.

Balance in the treasury, March 31, 1851, $4,943 78.

During the progress of the surveys, last season, the President of the Company personally visited most of the counties situated on or near the proposed line of our road. He found a general disposition prevailing among the people of those counties, to aid our work by every means in their power. Steps were taken by the County Courts in nearly all of them, to test the sense of the people in regard to subscriptions by their respective counties. In every case the vote resulted in favor of the subscription. No county subscription has, however, actually been made, excepting by the counties of St. Louis and Jackson; the former of which has subscribed $100,000, and paid the first instalment of five per cent., and the latter has made, by order of court, a conditional subscription of $100,000, payable when the road is completed up to the Jackson county line. A small amount of individual subscriptions have been made in Franklin county and in Cole county, and efforts are making, with reasonable prospect of success to increase the subscription in those counties.

The total amount of actual subscriptions to the stock of all kinds, to this time, is	$544,100
Add conditional subscription of Jackson county	100,000
Add subscriptions of individuals in Cole and Franklin, about...	14,000
Add subscription voted by people of St. Louis	500,000
	$1,158,100

It may be proper to exhibit here the sum necessary to be added before we can avail ourselves of any part of the State loan. and this sum it is necessary to raise by further subscriptions here, and in the counties along the line in the interior.........	341,900
	$1,500,000
Upon which the State makes a loan of................................	1,500,000
	$3,000,000

To avail ourselves of the whole of the loan authorized by law, we shall be obliged to increase our stock subscriptions $500,000 more than the above, when our available means would amount to $4,000,000.

The law enacted by the Legislature to expedite the construction of our road, requires the Governor to issue and deliver to the Company $50,000 of the bonds of the State, running twenty years, and bearing six per cent. interest, for every $50,000 collected and expended of our own moneys in the actual construction of our road, provided, however, that we shall first have $1,500,000 subscribed in good faith, to our stock, and that the total amount issued to our company shall not exceed two millions. To secure to the State the payment of the annual interest and the ultimate redemption of the principal of these bonds, the Company are to mortgage their road and its appurtenances to the State, from time to time, as the bonds are issued and accepted by the Company.

The application of the Company to Congress for a grant of the right of way through the public lands, and also for a donation of alternate sections of land along the route of our road, although supported by numerous petitions from people in different parts of the State, and by the entire delegation of Missouri in Congress, was not so successful as our appeal to the Legislature of the State. A bill granting the State, in aid of our work, alternate sections of land in a space six miles wide on each side of the road, passed the Senate of the United States, and, could it have been reached, would probably have passed the House of Representatives. That grant, when added to our other available means, would have given us the ability to construct our entire road to the State line. The Board cannot but hope that this much desired grant may be made at the next session of Congress. The location of our line seems to be necessary, in the view of many of our friends in the interior, in order to obtain the full amount of additional subscriptions which the interior counties would be willing to make. And yet it is well known that the final location, if made now in its whole extent, would be immediately followed by the private entry of valuable public lands upon it, and the Company would thus lose the benefit of any grant that might thereafter be made, while the United States would be the greatest beneficiary of our work. Already a considerable spirit of speculation has been excited by our proceedings, and large amounts of lands, subject to private entry, have been taken up in the vicinity of the lines of our surveys. The unusual receipts at the Sub-Treasury in this city, recently from the Clinton land district, may be referred to in proof of this. It would seem that the United States, in reference as well to their proprietorship of land as to the necessities of their governmental service extending beyond our western boundaries, are deeply interested in the improvement proposed by our company, and ought, in justice and equity to assist us, as they can do so, not only without loss, but with positive advantage to themselves.

The Board of Directors, however, believing that it is important that a commencement should be made of the work, have concluded that some forty or forty-five miles of the road may be located and put under construction the present year, without thereby necessarily fixing the route of the remaining part of the line, but leaving the location of that part undecided, until we shall have tried the effect of another appeal to the liberality of Congress.

The report of the Engineer demonstrates the fact, that we may construct our road upon any one of the three lines surveyed for the distance of forty to forty-five miles westward of this city, and yet be able to adopt with facility either of the three lines surveyed beyond that point to our ultimate destination—the western line of the State.

In consequence of the temporary absence of the Chief Engineer, the necessity of further surveys around the city, and of the fact that a new Board of Directors is about to be elected, the present Board have not thought it advisable to locate any part of the line. It is believed, however, that the commencement proposed may be located and put in readiness for contract by the month of June.

The first part of the line will be the most costly, and the forty miles proposed may be estimated at about $1,000,000, including lands for buildings in St. Louis, land damages, superstructure, buildings, machinery and cars. The expenditure may be distributed over such a space of time during the present year and the next, as not to make it necessary to call on the individual stockholders for more than 33 per cent. of their subscriptions, during the present year. This result will be attained, whether we are able to avail ourselves of any part of the State loan or not, if the city subscription be made as voted by the people. If we succeed in increasing our subscriptions the requisite amount to enable us to receive State Bonds, the amount of the call upon the stockholders will be lessened in proportion to the amount thus received from the State.

The Board are of opinion that the Company and their friends may well congratulate themselves and the State upon the spirit exhibited by the recent session of the Legislature; especially as illustrated in the favor and liberality extended with great unanimity toward the enterprise of this Company. Pressed forward and sustained by a similar spirit, its triumph must be certain. The Legislature granted nearly all we asked, both in the way of loan of the credit of the State, and in the amendments of our charter. We shall be unworthy of the confidence thus liberally reposed in us, if we should not exercise the powers and privileges granted to us, with good faith and renewed energy.

The amendments to our charter cannot but be regarded as very liberal, and of very considerable advantage to the stockholders and the interests of the Company. Under the original charter the stockholders were individually liable to the creditors of the Company, to double the amount of their stock. This liability is reduced by the amendments to an amount equal to the amount unpaid on the stock held by each, and that only until the whole of the stock so held shall have been paid in. It was a matter of doubt before, whether our charter was not limited by the general law to twenty years. By the amendments a considerable part of that law is made inapplicable and our charter is now perpetual. Before, certain points were fixed, by which we were obliged to construct our road. The whole country is now, by the amendments, thrown open to us, and we may build our road on any line we may deem most advantageous, between St. Louis and the western boundary of the State. The property of the Company is, by the amendments, exempted from taxation for five years.

There is another provision which reduces the power of the larger stockholders in the Company, and relatively increases the strength of the smaller ones. An ownership of ten shares is, however, made necessary, to make a stockholder eligible to a directorship, and the number of directors is increased to thirteen. There are other provisions intended to protect the interests of the Company, as well as of the public, and to increase our facilities of procuring the necessary materials for construction and operation.

These amendments require the assent of a majority in number and interest of the stockholders to give them the effect and force of law.

It may be expected that we shall speak practically of the work we have undertaken. The able report of the Engineer will satisfy every inquiry as to its practicability. The characteristics of the several lines surveyed are there plainly exhibited. The length is about 300 miles. The estimated cost averages about $20,000 per mile, or a total of six millions, including everything necessary to put the road in complete working order. The maximum grade is about fifty feet to the mile; but this may possibly be reduced.

The general plane of the country south of the Missouri river is shown to be somewhat higher, perhaps, than has been generally supposed. In going west forty miles we rise four hundred feet above high water of the Mississippi. At one hundred and ten miles distant, near the Gasconade, we are elevated six hundred and fifty feet; at two hundred miles, seven hundred and fifty-five feet; and at the State line, six hundred and sixty-six feet above high water at St. Louis. The valley of the Gasconade is four hundred and ninety, and that of the Osage three hundred and eighty feet below this general plane, and the country, as far west as the Osage, is much broken, making considerable curvature and undulation in our line necessary. The valleys of the Missouri and of the Merrimac, however, as far as we may follow them, both admit nearly level grades, and while the former is something the shortest, it is per mile the most costly.

For example: the 55 first miles of the Merrimac route are estimated to cost $22,979 per mile, while the 49 first miles of the Missouri route are estimated at $25,878 per mile. The continuation inland of the Merrimac route to the western boundary, involves somewhat greater length, and therefore a larger aggregate of cost. There are, however, certain combinations of the Merrimac and Missouri routes, which may, perhaps, be worthy of consideration upon the final location.

Our prime object is, probably not now to get to the western boundary merely, and at all events, but it is to construct our road in such a line to that boundary as will best promote the interest of the company and of the public. Besides mechanical considerations, therefore, there are others of even greater importance to us, and which we must maturely weigh before making a selection and location of a route that is forever to seal the fate of the work.

It is some encouragement to observe that the country through which our road is proposed to be located, is rapidly improving. According to the returns of the recent census, there has been an increase of population in the counties bordering the Missouri river on the south, from St. Louis to the western line, and including the next southern tier of counties, of about 24 per cent. in two years.

The aggregate population of these counties

In 1848 was	191,095
In 1850 it was	236,100
Increase in two years	45,195

The country is found to be well supplied with minerals of different varieties, with timber, and for the major part of the distance it possesses excellent agricultural resources. The farming lands are falling rapidly into the hands of those who will cultivate them, and the facilities of transportation to be afforded by the railway will bring out the resources of the mineral lands to the fullest extent.

The trade of Missouri, judging by the increasing number of steamboats employed, is advancing at the rate of ten per cent. per annum.

So nearly as it can be ascertained, the river charges to and from the Missouri, were in 1850 :

On Freight	$450,500
On Passengers	368,000
	$818,500

This, gathered from manifests, &c., is probably considerably lower than the truth.

The stockholders are doubtless looking not only to the effects of this work upon the prosperity of the city and State, but very properly also to the probabilities of its traffic being remunerative to them. The Engineer has, in his report, carefully collected the materials for a very fair and reasonable estimate of the amount and value of its traffic. The several items which compose the estimate, seem, upon examination, to be moderately stated, and yet the aggregate shows an encouraging result.

The estimate referred to, includes freight and passengers on all parts of the route, but the larger number of passengers and tons of freight, are for short distances. The estimate gives :

128,000 tons of freight	$470,000
139,000 passengers	501.700
Total	$971,900

In this is included some 45.000 tons of freight and 32,000 passengers, not in any way accommodated by the river ; nevertheless, a comparison of the above shows the estimate to have been based more on the present business of the country than on the increase that must inevitably follow the improvement of transportation—an increase that on all railroads has exceeded the most sanguine expectations of the projectors.

It is, perhaps, not unworthy of remark, that the examinations and results of the past year, have very fairly, so far as they have gone, borne out all that was predicted or promised in the first address to the corporators, made in January, 1850, under the influence of which, in part, this company was organized.

It only remains for us to add that the Company commenced, and have thus far progressed, with better success than has marked the insipiency of works of a similar extent in other parts of the United States. The practicability, expediency and advantages of the railroad have been demonstrated, and every circumstance encourages us to persevere to its final completion.

THOS. ALLEN,
JAMES H. LUCAS,
DAN. D. PAGE,
EDWARD WALSH,
GEORGE COLLIER,
JAMES E. YEATMAN,
L. M. KENNETT,
LOUIS A. LABEAUME,
JAMES HARRISON.

St. Louis, March 31, 1851.

On motion the foregoing report was accepted.

TREASURER'S REPORT.

The Treasurer made the following report, which, on motion, was accepted:

Thomas Allen, Treasurer, in account with Pacific Rail Road Company:

DR.

To instalments received of stockholders		$24.517 50
To cash from sale of horses	$416 00	
To cash from sale of flat boats	66 93	
		482 93
		$25.000 43

CR.

By cash paid for instruments, outfits, engineering and office expenses	20.056 76
Cash on hand	$4.942 78
Amount of instalments unpaid	2.687 50

E. E.

THOMAS ALLEN, Treasurer.

St. Louis, March 31, 1851.

The President laid before the meeting the Report of the Chief Engineer, James P. Kirkwood, Esq., accompanied with maps, profiles and tabular statements, some of which are as follows, viz:

P. Estimates of the cost of the route surveyed.
E. Abstracts of estimates.
H. Tables of grades going east and going west.
K. Tables of curvature.
M. Table of railroad freight, charges and passenger charges.
N. Table of river freight charges.
P. Tabular statement of probable increase in value of lands.
L. Loads of locomotives on different grades.
Q. Table of distances from St. Louis to different points.
R. Population and valuation of Boston in 1820 and 1850.
S. Population of certain cities.
T. Table of Population of States, &c.

The report and documents were considered and, on motion, accepted and ordered to be filed.

On motion of C. C. Whittelsey, Esq., the following resolution was adopted:

Resolved, That the Board of Directors be requested to publish in pamphlet form the reports of the President and Treasurer of the Company, and so much of the Engineer's report as they may deem advisable.

On motion of Mr. John Hogan, it was unanimously

Resolved, That this meeting approve of the resolution of the Directors adopted on the 12th inst., to commence the construction of forty-five miles of the road this season; *provided, however,* that the city of St. Louis shall first subscribe the amount of five hundred thousand dollars to the stock of said Company, as authorized by act of the Legislature, and directed by the vote of the people.

On motion it was unanimously

Resolved, That the stockholders do assent to and approve the amendments to the charter of this Company, enacted by the Legislature, and approved March 1st, 1851; and in witness thereof they subscribe their names to the said charter amendments.

Mr. Barnett offered the following resolution:

Resolved, That the final location of a portion of the road, in conformity to the resolution at this meeting adopted, be referred to the stockholders for their approval.

Which, on motion of C. C. Whittelsey, was laid on the table.

On motion of Mr. Knuckolls, it was

Resolved, That the chairman appoint a committee of three, to confer with the Mayor and City Council of the city of St. Louis, relative to the consummation of the proposed city subscription to the stock of the Company.

The chairman, by virtue of the above resolution, named the following gentlemen:

Wayman Crow, Edward Walsh and Hudson E. Bridge.

On motion of Alexander Labeaume, it was ordered—

That the Secretary of this meeting give public notice that this meeting adjourns from day to day to meet at the same place, at the hour of ten o'clock, A. M., for the purpose of receiving the assent of the stockholders to the amended charter.

On motion, it was

Resolved, That the proceedings of this meeting, together with the reports of the Boards of Directors and Treasurer, be published in the papers of the city.

The meeting adjourned until ten o'clock to-morrow.

* * *

Pursuant to notice and adjournment, the stockholders met at the Merchant's Exchange, on Tuesday morning, the first of April. The minutes of the preceding meeting being read and approved, the Committee appointed to wait on the Mayor and City Council, relative to the proposed subscription to the stock of the Company, made the following report which was accepted.

The undersigned, a committee appointed yesterday by this meeting for the purpose of conferring with the Mayor and City Council relative to the consummation by the city of the proposed subscription to the stock of the Company,

REPORT:

That in accordance with the resolution of instruction, they have had an interview with L. M. Kennett, Esq., Mayor of the city, from whom they learn that an ordinance passed both branches of the Council yesterday evening, authorizing the subscription, on behalf of the city, of five hundred thousand dollars in the capital of the Pacific Railroad Company.

The bill has not yet been presented to the Mayor, but the committee feel no doubt that it will be approved by him, and as soon as it becomes a law, that he will promptly make the subscription.

Which is respectfully submitted.

WAYMAN CROW,
HUDSON E. BRIDGE.
EDWARD WALSH.

St. Louis, April 1st, 1851.

The stockholders present subscribed their names to the amendments of the charter; after which the meeting adjourned to meet at the same place on the following morning, at ten o'clock, A. M., where all the stockholders were urgently solicited to attend.

A. B. CHAMBERS,
Chairman.

G. R. TAYLOR,
Secretary.

The meeting of the stockholders was continued from day to day, and stockholders continued to subscribe their names to the charter amendments until Friday, the 4th of April, when the meeting adjourned to Wednesday, the 9th of the same month.

Pursuant to adjournment the stockholders met again at the Exchange Buildings, April 9th, 1851, A. B. Chambers, Esq., in the chair.

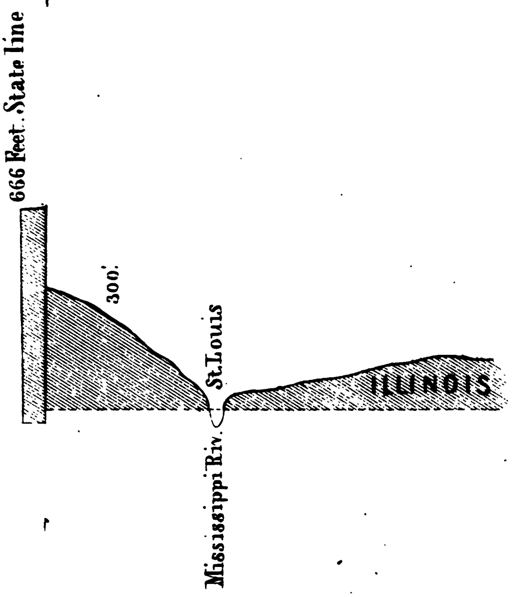
On motion,

Resolved, That this meeting stand adjourned until the 4th Monday of November, A. D., 1851, unless sooner called by the chairman.

A. B. CHAMBERS,
Chairman.

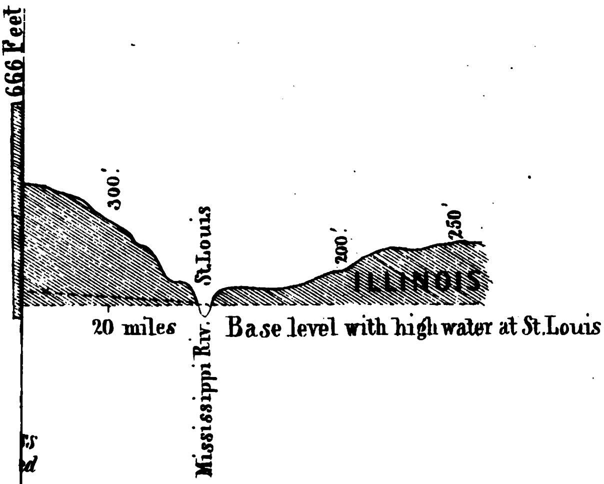
GEO. R. TAYLOR,
Secretary.

Nº 1



666 Feet. State line
300'
St.Louis
ILLINOIS
Mississippi Riv.

Nº 2



666 Feet
300'
St.Louis
200'
250'
ILLINOIS
20 miles
Base level with high water at St.Louis
Mississippi Riv.

REPORT OF THE CHIEF ENGINEER.

St. Louis, January 10th, 1851.

To the President and Directors of the Pacific Railroad Company.

Gentlemen: The preliminary surveys for your road, embracing an examination of the country between St. Louis and the western line of the State of Missouri in Cass and Jackson counties, were commenced on the 24th of May, and closed on the 29th November, 1850. I have now the honor to report the results.

The accompanying sketch in profile of the general plane of the country between St. Louis and the western boundary of the State, will assist in understanding the ground over which we have passed. Sketch No. 1 shows the general outline of this plane, independent of the valleys made by the streams which break through it. From St. Louis to the Gasconade the outline shows the summit of the dividing ridge between the waters of the Merrimac and the waters of the Missouri; from the Osage valley by Versailles to the State line, it shows the summit of the dividing ridge which separates there the waters of the Osage river from those of the Missouri river above the mouth of the Osage. This general plane is crossed near its centre by the rivers Gasconade, Marais and Osage, creating there (as may be seen on sketch No..2) three deep valleys and two intervening ridges. These valleys, when compared with the height of the country on either side which has to be surmounted on the inland route, are respectively 490, 270 and 380 feet in depth. The valleys of the Gasconade, Marais and Osage rivers cross our general course nearly at right angles and are besides in such close proximity, as to render a circuitous course necessary to approach either of them and to escape from either of them at a tolerable grade. There must, therefore, be considerable distance lost in passing over this broken portion of the plane, attended with an expense of construction above the average.

The general elevation of the plane of the Illinois country, in a direction east from St. Louis, varies as I am informed from 200 to 250 feet above the Mississippi river. It will be observed by the profile sketch before you, that at 22 miles west from St. Louis, in the general direction of your road, the height of the plane is 300 feet above high water of the Mississippi, at 40 miles 400 feet, at 60 miles 250 feet, at 110 miles 650 feet, at the Gasconade river 160 feet, the Osage river 120 feet, at 155 miles 505 feet, at 200 miles 755 feet, at 260 miles 460 feet and at the State line in Cass county 666 feet above high water of the Mississippi at St. Louis. Your attention is drawn to this comparison between the general elevation of this section of the Missouri country, and that of the Illinois country, because it is to a certain extent explanatory of the greater cost per mile of a railroad through this division of Missouri, when compared with one through the less elevated plane of Illinois.

The first hundred miles from St. Louis, of this original plane is reduced to a narrow ridge by the action of the waters of the Merrimac river and of the Missouri river, whose valleys here run parallel to each other, the first on the southern side of this ridge, and the second on the northern side, narrowing the ridge at times to eight and ten miles in width. On this portion of the line we are therefore presented with three very marked modes of advancing to the upper country, one on the southern side of this ridge by the Merrimac valley, one following the top of the ridge along the "divide," and one following the northern side of the ridge up the Missouri river valley, all of which have been examined and surveyed.

I will now describe the general direction of the several lines surveyed to Jefferson City, beginning with the line up the Merrimac valley and Bourbeuse ridge.

The general map, marked U, and the profile sheets Nos. 1, 2, 3 and 4, marked V, will explain the character of these lines in detail.*

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*The maps and profiles can be seen at the office of the Company.

The base of all the levels is referred to the base of the monument on Front street, St. Louis, 7 feet and six inches below the high water mark on that monument of the freshet of June, 1844.

The distances are measured from a point in St. Louis on Fourth street, to the north of the South Market, but the mode of reaching the river is not thereby intended to be defined, there having been no time devoted this season to the examination of the different modes of entering the city; the proper location into the city remains to be determined after minute surveys of the different available lines through the streets.

MERRIMAC VALLEY LINE.

This line is represented on the accompanying map by a full black line.

†Starting from Fourth street* in St. Louis, this survey follow- 0 miles
ed the valley of Spring creek, crossing Chouteau's pond twice. 0 feet St. Lou
Near the head of this creek, at Mr. Suter's cottage, the line
crosses a subordinate ridge,* and enters the valley of the north 0.35
fork of the river Des Peres. The survey proceeds down the 80
valley for some miles, and then follows the southern fork of
the Des Peres to the summit of the ridge to be crossed to reach
the waters of the Merrimac river. This ridge* is crossed near 17.4
the Des Peres post office, and the line descends thence by the 195
valley of Sugar creek and Grand Glaise creek to the valley* of 23.6
the Merrimac river. The ascent to this ridge from St. Louis 13
is at the rate of 28 feet per mile, and the descent into the Maramec valley at 40 feet per mile.

There is another mode of reaching the Merrimac, which we have not had leisure to examine. From beyond Chouteau's pond this route diverges to the south, crosses the common fields of Carondelet, and enters the valley of the Gravois creek which it follows to its source, crossing there the same ridge

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†The counties, through which the lines described pass, are written on the margin. The figures on the margin show the distance of certain points from St. Louis, and the height of grade at those points above high water at St. Louis; the upper figure being the distance, the lower one the height.

and reaching the valley of the Merrimac river by the vallies of
24 Sugar creek and Glaise creek as in the route already describ-
13 ed.* This route was surveyed in 1839, by Major Morell. According to his survey it is somewhat longer than the line surveyed during the past season. It would pass within reach of a greater number of coal fields than the other, and, for the first ten miles, would accommodate a denser population.

33 Having entered the Merrimac valley, the line follows the
25 north bank of the Merrimac river to Flat creek* opposite to which Big river enters the Merrimac. Thence the valley of this creek is followed for some miles; thereafter crossing Flat creek the survey returns to the valley of the Merrimac near the St. Louis county line. The line then continues up the north bank of the Merrimac valley to the mouth of the Bour-
ranklin. beuse river.

A survey was made up the Bourbeuse river valley as far as Union, where it was abandoned on account of the distance lost by the circuitous nature of that valley; from the village of Union it was connected with the ridge survey to be afterwards described.

The above line up the Bourbeuse having been abandoned, an examination was made of the ridge between the Bourbeuse and the Merrimac rivers, and the survey resumed from the
55 mouth of the Bourbeuse river up that ridge.

77 Crossing* the Bourbeuse river about three miles above
61 its mouth, the survey follows a small branch lying in
335 our general course, and attains the summit of the ridge,*
beyond Mr. Murphy's farm, with a grade of fifty feet
per mile. Thence the line follows the divide for some
63 distance, passing near Mr. Massy's house,* through the Hen-
378 drick place and by Mr. Austin Clark's. Beyond this,
79 *it diverges to the south west and enters the valley of Little
495 Boon creek, which is followed to the main creek, and so on, to
87 near the mouth of Boon creek,* where the line diverges to the
265 89 left, and to avoid a long bend of the Bourbeuse, it crosses a
345 high spur by a short tunnel* of 200 yards, entering thereafter
91 the Bourbeuse valley, and crossing the Bourbeuse river* oppo-
270 site the mouth of Red Oak creek. The descent into Boon creek
is at the rate of 50 feet per mile with heavy work.

Between the mouth of the Bourbeuse river and the mouth of Boon creek, another route was examined on the Bourbeuse ridge, but not surveyed throughout. This route diverges from the line just described near the farm of Mr. Samuel Massy, and with a course north of west, follows the valley of a small branch to the Hamilton place on Hamilton creek. The line would cross the valley of this creek; thence, rising to overcome a projecting spur, it would follow the general direction of that valley to Spring creek. It would then pursue one of the branches of Spring creek, and pass thence into a branch of Boon creek, connecting thereafter, as shown on the map, with the line already described.

This route would not probably be more expensive in graduation than the route surveyed, and it would save four miles of distance. I have, therefore, in the tables of distances and grades, allowed for this correction, and for a proportionate correction in the estimates.

Resuming the description of the route surveyed; after crossing the Bourbeuse river near the mouth of Red Oak creek, the valley of Red Oak is followed to the summit* of the ridge near the widow Wiseman's house. The ascent is at the rate of 45 feet per mile. From this last point the route enters one of the heads of Third creek, and thence follows Third creek to the Gasconade river. ($\frac{115¼}{145}$) The Gasconade river is crossed here, and its west bank followed to the mouth of Swan creek. ($\frac{128¾}{165}$) The descent on Third creek is at the rate of 42 feet per mile.

$\frac{102¾}{492}$

Osage

In all the crossings of the Gasconade and Osage rivers, the bridge estimates comprehend a draw bridge in the channel of sixty feet opening.

Between the mouth of Red Oak creek, on the Bourbeuse river, and the mouth of Swan creek on the Gasconade river, another route was surveyed, which reduces the distance between these points three miles, and is the line on which the estimate for the Merrimac route is based. The maximum grade on this route is 50 feet per mile, while the maximum grade on the Third creek line, is 44 feet per mile.

This route bears to the west from the mouth of Red Oak creek, and follows a small branch called Bear Rough creek, attaining thus, with a grade of fifty feet to the mile, the summit

Frankl

Gascon

101 of a subordinate ridge, whose general course is followed to its
642 connection with the main ridge* near Douglas prairie. Thence
Osage the line follows the main divide to Galloway prairie. At Gal-
109/640 loway prairie it diverges to the north-west,* and crosses some
of the heads of Third creek, and of Buck Elk creek, and enters
119/152 the valley of Indian creek which is followed to its mouth;*
thence the line pursues the east bank of the Gasconade valley
121¼/168 to Wilson's ferry opposite Swan creek, where it crosses the
Gasconade river, and* joins the route already described.

The route now follows the valley of Swan creek with an as-
126¼/310 cent of 50 feet per mile, crosses* the Linn ridge, and enters the
valley of Cam Seay creek, which leads into the valley of the
Marias river. The Marais river is thence followed to Lisle. The
136½ maximum descent here is 45 feet per mile. At Lisle the line
136 crosses* the Osage river and follows thence the west bank of
Cole the Osage to its mouth. ($\frac{141}{132}$) The survey then pursues the
149.03/146 valley of the Missouri to Jefferson* City.

Wherever the line crosses streams, or follows the valleys of rivers, the grade line is drawn at least two feet above the level of the highest known freshet, and this observation is applicable to all the routes surveyed.

The entire distance from St. Louis to Jefferson City by this route is 149 03 miles.

UNION RIDGE LINE.

This line is distinguished on the accompanying map by a dot-
St. Louis. ted line.

From St. Louis to opposite the Des Peres Post Office, the line already described for the Merrimac route is common to this
17.4 one.

195 From opposite* the Des Peres Post Office on the ridge, the
line continues along the "divide," passing about two miles to
the south of Manchester, thence diverging southerly to within
33 two miles of the Merrimac river, thence with a westerly direc-
372 tion to Fox creek Post Office,* thence south westerly to Tuck-
Franklin. 44 er's hill, where occurs the deep sink in the ridge known as
400 Gray's gap. At the top of Tucker's hill,* the surface of this
ridge is 400 feet above our base at St. Louis; at the foot of

Tucker's hill on the "divide,"* the height is 225 feet above the 47 225
same base. The difference is 175 feet, and the form of the
ground does not admit of the descent being overcome except at
considerable expense.

From Gray's gap the line continues westerly along the "divide,"* 50
passing about two miles to the north of the village of 37
Union, where occurs another important depression.* 57

From opposite Union the line bears south-westerly to about 25
a mile beyond Mr. Terry's farm, whence it follows a westerly
course, still keeping upon the general line of the "divide," to
Mr. Nathan Wares; thence it continues with considerable irregularity
in direction by Mr. Maupins to near the farm of Thomas 85
Stiles.* From this point the ridge pursues a north-west 41
course for five miles, returning thence southerly some four miles. Gasco
This bend in the divide was surveyed, but abandoned for the
more direct line across the heads of Red Oak, attaining the
height of the same ridge again* near the widow Wiseman's 8
farm. From widow Wiseman's the line enters one of the 52
branches of Third creek which it follows to Gasconade river* 10 14
as already described in connection with the Merrimac river route. Osa
Thence the route follows the valley of the Gasconade to Swan* 11
creek. From Swan creek to Jefferson City, the line described 16
already for the Merrimac route is applicable to this route. Co

The entire distance from St. Louis to Jefferson City by this route is 142 97 miles.

MISSOURI RIVER ROUTE.

This route is distinguished on the accompanying map by a dotted line.

Leaving St. Louis in the same manner and on the same 0 m
ground as the route for the Merrimac river, this route follows 0 f St. L
the valley of Spring creek to near its source; thence it enters
the valley of the north fork of the Des Peres river which is followed
to its head,* the maximum grade on the ascent being 34 1 2
feet per mile. From this summit the line descends to Feefe
creek* with a grade of 40 feet per mile. Thence the line ascends 1
by a similar grade of 40 feet per mile to the source of this
creek, crosses the "divide"* there, and falls into the heads of the

Spring branch of Creve Coeur creek. This branch is followed to the valley of the Missouri river* at Creve Coeur lake, with a maximum descent of 40 feet per mile.

From Creve Coeur lake the line follows the bluffs of the Missouri valley to the Bonhomme bottom; continuing along the bluffs, here it touches the river channel at Port Royal,* crossing the Bonhomme creek, Wild Horse creek and other smaller branches. Immediately beyond Port Royal the line passes over a rocky spur, with grades of 34 feet per mile. Thence the line continues along or near the bluffs to South Point,* crossing the Tavern creek and other branches and encountering points of rock which are partially avoided by increasing the uniform rates of grade of the river bottom. At South Point the line is in proximity again with the channel of the river and continues so to Washington,* and the crossing of St. Johns creek beyond that village. Thence the line skirts the bluffs, occasionally touching the river channel, and crosses the Boeuf creek and the Berger creek. From the Berger creek, for six miles up the valley, the line is distant from one to two miles from the river; thence it continues along the river bank to the village of Hermann.* From Hermann the line runs along the foot of the rocky bluffs and close upon the channel of the river to the mouth of the Gasconade river.* The Gasconade river is crossed a short distance above its mouth. From the Gasconade river the line continues along the bluffs and away from the channel of the Missouri river, for some fifteen miles, crossing Bailey's creek and other branches; thereafter it follows the channel, for some distance, leaving it at what is called French village, and touching it again before approaching the Osage river. Having crossed the Osage* the line passes behind the immediate bluffs of the river, crosses a spur with some heavy cutting, and crossing thereafter Royston's creek re-enters the immediate valley of the Missouri; thence it follows the channel of the river and the bluffs to the mouth of the Moreau river.* The Moreau river crosses our line very obliquely. From the Moreau river the line follows the bank of the Missouri river to Jefferson City.*

The length of this line from St. Louis to Jefferson City is 121.87 miles. The grades up the river valley with a few exceptions, correspond with the general fall of the Missouri river, and are nearly level.

The lengths of the three routes described (from St. Louis to Jefferson City) are then as follows:

The Merrimac and Bourbeuse route	119.03	miles
The Union ridge route	142.98	"
The Missouri river route	121.87	"

LINE FROM JEFFERSON CITY TO THE STATE LINE.

This route is distinguished by a full black line on the map.

I will now describe the line surveyed from Jefferson city to the State line and to Independence, referring to the map and profiles for a proper understanding of its position in the different counties, and the general character of its grades.

From Jefferson landing the line passes up the river under the 121.8/146
bluff on which the State House stands; diverging thence from
the river westerly and following up the valley of Long creek to
its head* with grades of 40 feet per mile, it reaches the summit 128/371
of the subordinate ridge dividing the Moreau waters from those
of the Missouri, on Jonas Scruggs' farm. From thence the survey continues westerly along the "divide" to the village of Ca- Monite
lifornia; *thence the direction is north-westerly for four miles, 147/472
and thereafter westerly, passing about two miles to the south of
Round hill, and thereafter to the north of Mr. Huft's, and thence
on to where the line begins* to descend into the Lamine valley. 163./547
The first part of the descent is effected on the heads of Otter
creek; this creek is then crossed, and the line, passing over a
minor ridge,* enters, near Thompson's store, the valley of a 168./418
small creek leading westerly in the Lamine river. This valley Coope
is followed to its mouth with a descent of 42 feet per mile. The
line crosses here the river Lamine* about one mile and a half 171./265
below the junction of Flat creek, and continuing its westerly
direction, follows up Long Branch, passing to the north of Elkton, and gaining thus the height of the Georgetown ridge by an 176.4/450
ascent of 42 feet per mile. *Thence the survey continues along
the Georgetown "divide," passing about four miles to the south Petti
of the village of Georgetown,* and following thereafter a south 186./498
westerly direction over easy prairie ground to opposite the high
point of Tibo, where the survey from Versailles connects.* The 207./524
Georgetown ridge connects here with the main ridge dividing Johns
the waters of the Osage river from the waters draining into the

209.6 Missouri above the mouth of the Osage. From the last men-
557 tioned point the survey follows a westerly course;* passing
through the farm of Mr. Draper, and thence with easy grades
219.7 and work along the main divide, touching the heads of Clear
564 Fork creek, to the high point of Post Oak.* Thence, avoiding
the heads of Post Oak creek, the "divide" continues to be fol-
243.3 lowed with a general north-westerly course, over favorable
460 ground to the Centre Knob.* Thence, continuing a north-west
course, it leaves the main divide and crosses Paul's branch, and
Cass. thereafter Crawford's fork, and enters then the valley of Perci-
Jackson. val creek, following it to its head where it returns to the main
260.9 "divide"* some six miles west from the village of Lone Jack.
614 From this point the line follows a westerly course for five miles,
passing to the south of Grovier's farm, and thence south-west-
274.6 erly along the "divide," keeping to the south of Col. Allen's
676 farm, and crossing again into Cass county."* Thence it fol-
lows the general course of the divide which is circuitous here
278.71 to the State line, where the survey of this line terminated in
666 section 31, of Town. 46, Range 33.

From Georgetown to the State line the general character of this route over the prairies is favorable, both as regards grades and the cost of construction.

BRANCH TO INDEPENDENCE AND KANSAS.

261 This branch is distinguished on the map by a full black line.
616 From a point on the prairie* divide, near Grovier's, the sur-
on. vey of this branch enters one of the heads of the east fork of
274 Little Blue creek, which it follows to its connection with that
336 stream,* descending at the rate of 41 feet per mile. It then
crosses Little Blue creek and pursues the valley of Fleur Noir
branch for two miles; bending thence in a north westerly di-
280 rection, and crossing the heads of other branches, it reaches the
578 summit of the Independence ridge at Independence,* ascending
with a grade of 42 feet per mile. Thence the line falls into the
285 valley of Rock creek, which is pursued with a descent of 52 feet
323 per mile to the Missouri river valley.* Thence it pursues a
291.5 westerly course, crossing the Big Blue creek near its mouth, and
325 thereafter following along the river bluffs, to the Kansas landing.*

Kansas may be reached in another way, and it is believed with less expense in connection with a correction of the survey to the State line, which I shall now describe. The time at our disposal did not permit us to make a survey of this alteration.

MODIFICATION OF THE ROUTE TO THE STATE LINE.

From a point on the prairie line,* about four miles south east from the Centre Knob, this line would take a westerly course to Percival's creek, which it would cross below Percival's mill; about a mile beyond this crossing it would enter the valley of Big creek and follow it to the mouth of Alexander's fork. The line would then be carried up Alexander's fork to the height of the prairie, connecting there with the survey already made to the State line.* This line is estimated to reduce the distance to the State line six miles, and allowance has accordingly been made in the estimates and tables of distance for this correction.*

The distances to the State line with this correction are as follows:

By the Merrimac line, Jefferson and Georgetown	305.87	miles.
By the Union ridge line, Jefferson and Georgetown	299.81	"
By the Missouri river line, Jefferson and Georgetown	278.71	"
By the Merrimac and Versailles line	306.05	"
By the Union ridge and Versailles line	300.30	"

In connection with the last described route, the branch to Kansas would, from the mouth of Alexander's fork above mentioned, continue up the valley of Big creek to the summit of the main ridge, which it would cross near Col. Allen's farm; thence it would descend by a small branch to the Little Blue creek, and crossing that creek there, ascend by another branch to the ridge which divides the waters of the Little Blue and the Big Blue creeks. Following down this ridge it would descend into the valley of the Missouri river, either by the Big Blue creek or the Little Rock creek, continuing thereafter along the foot of the river bluffs to Kansas. This line would not approach nearer to Independence than from two to four miles.

There are grades of 52 feet per mile on the line surveyed to Independence and Kanzas, but the maximum grade would probably be reduced by the line just described to 45 feet per mile. This line, so far as we can judge now, would reduce the distance to Kansas one mile, as compared with the line surveyed. The distances to Kansas by the several routes, with this correction, are as follows:

By Merrimac river route, Jefferson and Georgetown	317.68	miles.
By Union ridge route, Jefferson and Georgetown	311.62	"
By Missouri river route, Jefferson and Georgetown	290.52	"
By Merrimac and Versailles route	317.86	"
By Union ridge and Versailles route	312.11	"

It will be perceived that the distance to Kansas by the Merrimac and Versailles route differs but 18-100 of a mile from the distance to Kanzas by the Merrimac and Jefferson route.

In the event of Jefferson being made a point in the location, there are routes to be examined through the Black water country, and from Georgetown by or near Warrensburg which may modify importantly the direction of the route to Independence and Kansas.

To understand thoroughly the country between Jefferson City and Kansas, or between Jefferson City and the State line, and the best available route, various lines of survey remain yet to be made. The same remark is applicable to all the routes surveyed, on all of which important modifications would necessarily precede a location.

INLAND ROUTE,

CROSSING THE OSAGE RIVER ABOUT TWENNY MILES SOUTH FROM CEFFERSON JITY.

This route diverges at the Galloway prairie, in Osage county, from the line to Jefferson City described as the Merrimac line. It is also made a continuation of the Union ridge line by a connection with that line at the widow Wiseman's. An examination of the map will show these connections, and that a part of the Merrimac and Bourbeuse line is common to both.

The Versailles line is distinguished on the accompanying map
by a dotted line. 109

From a point* on the Merrimac line and on the Galloway 639
prairie near Elisha Ryan's, this Osage line pursues a south-westerly Osage. 112
course along the main divide for about three miles.*(*a*) From 630
this point two lines were examined for the crossing of the valley
of the Gasconade. The first followed a southerly course
along the "divide" for about six miles, entered then the valley
of Long creek, following it to the Gasconade river, continued up
the bank of the Gasconade for two miles, crossed the river and
entered the valley of Doyle's creek, which it followed to the top
of the ridge, (dividing the waters of the Gasconade and Marais)
near James Stuart's. 112

The other line diverges at the point* (*a*) above noted, from 630
the main "divide," and pursuing a course north of west, follows
a minor ridge for some miles and then enters the valley of a
small branch which is followed, descending at 55 feet per mile, 120½
to the Gasconade river near Mr. David Hoop's.* The line crosses 189.5
the river here and enters Hoop's hollow, following up a small
branch with an ascent of 57 feet per mile, to the height of the
aforesaid ridge, where it connects with the first survey just described 125
near James Stuart's.* This last is the line estimated, 458
but it was not, except on part of its distance, minutely
surveyed.

From James Stuart's farm the line descends by Beck's branch,
with a grade of 53 feet per mile to the valley of the Marais river, 129
crossing that river* near the junction of its east and west 274
forks. Thence continuing a westerly course, it leaves the Marais
valley, and follows up Tungate hollow, with a grade of 60
feet per mile to the top of the ridge which separates here the
waters of the Marais and Osage rivers. From this summit it descends
into the valley of Sugar creek, with a maximum grade of
53 feet per mile, and follows this valley to its connection with
the Osage river valley.* The south bank of the Osage river is 144
now followed for some four miles to opposite the mouth of little 152
Tavern creek. The line crosses* the river here and follows 149
the valley of Little Tavern creek with a grade of 52 feet per 152
mile to its head; it then crosses some of the heads of Saline Cole.

and Bois Brulee creeks and attains the summit of the main
ridge of this part of the country near Madison Belsche's
$\frac{155}{489}$ farm.*

The ground passed over by this line thus far, comprising the valleys of the Gasconade, Marias and Osage rivers, with two intervening ridges is very broken and the graduation of any line here must be expensive.

Miller. From the last-mentioned point the line pursues a course south
of west over the height of the prairie "divide," passing to the
south of Mount Pleasant, and by the farms of Murshall, Harrison,
Hume and others, to the highest ground on this part of the prai-
$\frac{168}{589}$ rie.* Thence the course of the line is northerly to Mr. Madole's
Morgan. farm; thence it pursues an irregular course to Versailles. ($\frac{185}{589}$)
From Versailles the general course is a few degrees south of
$\frac{196}{729}$ west to a high point on the prairie near Joseph Dolton's farm.*
This is the highest ground passed over by any of the lines surveyed. Thence the line continues near the divide over an easy
Benton. prairie country, to Charles Ard's farm, whence it follows a north-
$\frac{209}{684}$ west course to the crossing of the Jefferson City road* at Valentine G. Kemper's farm; thence the line follows an irregular
$\frac{219}{517}$ course westerly for about 11 miles.* Thence the general course is
Pettis. north-west to near the county line ($\frac{228}{519}$); thence the course leans
Johnson. to the west till it connects in the south-east corner of Johnson
county, near the high point of Tibo, with the Jefferson City
$\frac{234}{509}$ line* already described as surveyed up the Georgetown ridge.
From Versailles to this point the cost of graduation will be very moderate.

This inland line from the Galloway prairie by Versailles to the high point of Tibo, forms, in connection with the lines eastward from the Galloway prairie, and the lines westward from the Tibo point, a continuous inland route between St. Louis and the State line in Cass county, and between St. Louis and Kansas. The distances to the Tibo point of junction are as follows:

By the Merrimac route and Versailles	234.84	miles.
By the Union ridge and Versailles	229.08	"
By the Merrimac line, Jefferson and Georgetown	234.65	"
By the Union ridge line, Jefferson and Georgetown	228.59	"
By the Missouri river line, Jefferson and Georgetown	207.49	"

I will now submit approximate estimates of these several lines in divisions.†

It will be observed that the amount allowed for land and fencing is very small, on the supposition that, except when houses and city lots are encountered, the land damages will generally be relinquished. I have allowed a considerable sum for damages to property and the acquisition of land for depots in St. Louis, but whether this sum will exceed or fall short of the amount required cannot be understood until surveys of location into St. Louis are made. The amount allowed for freight and passenger accommodations at St. Louis will be sufficient for the present, but it will not be sufficient for the extensive freight accommodations which will probably be required on the river some years after the road is opened throughout and the business of the country through which it passes, fairly developed.

Some difficulty will be experienced in obtaining a sufficient supply of water on the ridge routes, and considerable expense must be incurred there in sinking wells and making other arrangements for that purpose.

There is an item of expense in the Missouri river route, which we have to some extent allowed for in the estimates of graduation, but which a preliminary survey does not admit of our understanding or estimating closely, viz: The stone protection which the embankment slopes will require, at different points, to defend them from the action of the river currents in freshets.

In the abstract exhibit of the estimates an allowance of $375,000 is made for the running stock of the road, sufficient for the commencement of operations with one passenger train daily either way, and one freight train daily either way. Whatever route may be adopted the line would probably be divided into three running divisions, of about 100 miles each. It would be out of place, in an allowance of this kind, which contemplates only the fair commencement of operations, and must be exceeded as the business of the road increases, to graduate the amount allowed nicely to the characteristics of the various routes. The same allowance has therefore been added to each.

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†The detailed estimates F. are not printed. An abstract of them is given further on.

The allowance embraces the following items:

9 twenty ton passenger engines.
9 twenty-six ton freight engines.
5 engines for gravel trains, distribution of wood, &c.

23 engines at an average of $8 400	$193,200
9 first class passengers cars at $2,200	19,800
5 baggage and mail cars at $800	4,000
280 plattform, cattle and house cars, at an averrage of $500	140,000
80 gravel cars at $150	12,000
30 hand cars at $100	3,000
	$372,000

The estimate of $7,400 per mile for the superstructure is composed as follows:

21,000 square feet B. M., oak sills 9x2 at $12 per M., delivered	$252 00
2,100 sleepers, at 25 cents, delivered	525 00
10,800 lbs. cast iron chairs at 3½ cents	$378 00
5,600 lbs. spikes at 4½ cents	252 00
102.5 tons rails (65 lbs. per yard) delivered at St. Louis at $45	4,612 50
Laying and filling track and cleaning ditches	600 00
Transportation and distribution of material	300 00
	$6,919 50
Add one seventeenth part for track of turnouts	$407 00
Add for switch apparatus of turnouts	56 00
Total for one mile (say $7,400)	$7,382 00

The accompanying table, marked G, combines the results of the division estimates and shows the cost in a way to admit of comparison, of the several lines from St. Louis to Jefferson City, from St. Louis to the State line, and from St. Louis to

M G THE S

S.

y D. *St. Louis* BY M *B. to Steins, thence to Gasconade River at*
ON *Douglass' Pr* *rk's, and by* VERSAILLES *and Tebo*
Clarke's, by V *y.*

IOPS. G ES.	ROADBED.	SUPE T	TOTALS.	MILES.	RATE PER MILE.
0	691,473 00	437,	1,221,284 00	51.92	22,987 00
0	485,827 00	231,	644,364 00	36.96	17,434 00
0	810,306 00	460,	1,271,896 00	53.93	23,584 00
00					
0	431,280 00	638,	1,218,678 00	86.27	14,126 00
0	206,497 00	394,	678,639 00	53.33	12,725 00
0	55,896 00	198,	385,082 00	23.89	14,026 00
0	2,681,279 00	2,360,	5,369,943 00	306.30	
0	s 13,000 00	— 44,	— 35,980 00	— 6.00	
00	694,279 00	2,316 0	5,333,963 00	300.30	17,737 00
)	2,625,383 00	2,161,	5,034,861 00	282.41	
	326,000 00	249,	695,880 00	30.70	
	65,000 00	— 7,4	— 79,640 00	— 1.00	
	261.000 00	241,9	616,240 00	29.70	20,749 00
00	886,383 00	2,403,	5,651,101 00	312.11	18,106 00

VEYS OF 1850.

Routes South of Jefferson City by VERSAILLES.

The tables marked H^1 and H^2, show the character of the grades on the different lines.

The table, marked K, shows the character of, and amount of, curvature on the different lines. The amount of high curvature on any of the lines given, would probably be reduced by a location.

The following table of the loads of locomotives on different grades will serve to explain the mechanical value of these grades.

L.

Table of comparison of the average load, which can be drawn by a twenty-four ton locomotive, at a low rate of speed, on the inclinations specified.

Grade.		Gravity per ton in lbs.	Friction and Gravity per ton in lbs.	Available Fraction of engine in lbs.	Gross load including engine and tender in tons.	Gross car load in tons.	Net freight load in tons.
Fractional value.	feet per mile.						
0	0	0	7	5283	755	715	357
$\frac{1}{1056}$	5	1.89	8.89	"	594	554	277
$\frac{1}{528}$	10	3.78	10.78	"	490	450	225
$\frac{1}{352}$	15	5.68	12.68	"	417	377	190
$\frac{1}{264}$	20	7.57	14.57	"	362	322	160
$\frac{1}{211.2}$	25	9.46	16.46	"	321	281	140
$\frac{1}{176}$	30	11.36	18.36	"	288	244	122
$\frac{1}{150.8}$	35	13.25	20.25	"	261	221	110
$\frac{1}{132}$	40	15.15	22.15	"	239	199	100
$\frac{1}{117.3}$	45	17.04	24.04	"	220	180	90
$\frac{1}{105.6}$	50	18.94	25.94	"	204	164	82
$\frac{1}{96}$	55	20.83	27.83	"	190	150	75
$\frac{1}{88}$	60	22.72	29.72	"	178	138	70

It remains to compare the characteristics of the routes, and this can only be done intelligently from two points of view; one referring to their engineering or mechanical advantages, the other referring to their advantages in regard to traffic and travel, and in regard to the development of the mineral and agricultural resources of districts of country, possessing at present, practically, no opening to a market.

I am aware that the first comparison is the only one which appertains strictly to the duties of the engineer, but I prefer to give some consideration to the second also, because in the case of your road particularly, they cannot be separated without prejudice.

I will first compare the engineering characteristics of the three routes from St. Louis to Jefferson City; but will not attempt now to estimate the effect on the cost of transportation, of the differences presented by this or the other tabular comparisons; because, the competition of the Missouri river in the one case and not in the others, makes the problem dependent on assumptions in regard to the measure of that competition, which must render any solution now but an indifferent approximation to the truth.

In this and the other summaries of comparison, the total lengths given are the corrected lengths after deducting for the change of line already explained. The amount of these deductions is distributed over the details of lengths of grades.

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support from a certain belt of country on either side of it. In the case of the Missouri river route, it is plain that this belt of country is for the north side of the railroad very much reduced by the inconvenient access to all of it north of the river, produced by the intervention of the stream, and further by the additional handling of freight and the expense attending it which the ferriage will frequently create.

These considerations must largely reduce the amount of freight, and to a less extent the amount of passengers, which, on its north side will be accommodated by, and will contribute to sustain the railroad in the Missouri valley, and this reduced amount is open to river competition and must be shared with the steamboats. There are considerations which will render this competition a safe one hereafter, when the country becomes more densely settled by an active population, whose time shall be sufficiently occupied to render economy of it synonymous with both comfort and wealth. The Hudson river railroad competes encouragingly now, when but partly in operation, with the Hudson river, and is doing a large business. The New York and New Haven railroad competes successfully with the East River or Long Island sound, which stands to it in the same relation as a navigable river. The railroads along the Lake shores, now making, will not suffer very materially by the competition of the lakes. The rapidity of the transit on the railroad, and above all, the perfect regularity of its operations, renders its accommodation immeasurably superior to that of steamboats. The competition of the Missouri river would be much less irksome than that of the Hudson. The navigation of the Hudson is remarkably safe and easy ; that of the Missouri is at all times tedious, and for one-third of the season intricate and dangerous. The average time made by its steamboats up stream, incuding all stops, does not exceed five miles an hour, and as the boats in running down stream, lay by at night, except in very high stages of the river, the average time down stream, including all detentions, does not practically exceed seven miles an hour. The irregularity of all the steamboat movements on this river, the uncertainty of the length of any trip made on it, and the risk attending all freighting operations there, will make competition with it much more easy than with such a river as the Hudson. Nevertheless its competition will seriously interfere for a time with the profits of any railroad built on its banks. There will be enough of business left, which the railroad cannot conveniently accommodate, on the north side of the stream and on its upper reaches, to sustain a certain number of boats, and the prices of freighting may thereby be reduced occasionally so low as to leave but little profit to either party. This contingency will be mainly confined to the low classes of freights in the river valley, and will not affect the earnings of those parts of the railroad away from the river. The freight from the north side of the railroad will consist entirely of agricultural produce.

On the south side of the Missouri river route, the belt of country tributary to the railroad will be more extensive. The land on these slopes is not as productive per acre as that in the river bottoms, but it yields good returns wherever cultivated, it is beyond the contingencies of freshets, and it is being rapidly occupied and improved by an industrious German population. The easy access to market, which a railroad will afford, will bring these lands rapidly into play, and make them from their proximity to St. Louis very valuable. The river will to a certain extent compete with the business of this side also, but for all market produce, merchandise and passengers, the promptness of the railroad will ensure to it the greater amount of the business. The freight on this side also will be chiefly agricultural. The route would be too distant from the iron and lead mines to reduce the cost of transit of their produce to St. Louis, though it would afford them at all times access to St. Louis. Until the cost of transportation of iron and lead to St. Louis can be importantly reduced, the extension of mining operations at present prices cannot be looked for. The Missouri river route does not admit of this reduction except by the construction of a branch from it to the mineral regions, which I shall advert to hereafter.

The Merrimac river route has been shown to be longer, more costly, and less valuable mechanically than the Missouri river route. It offers, however, advantages in other respects which neutralize to a large extent its mechanical disadvantages.

The Merrimac route touches the Missouri river at the mouth of the Osage, and thence follows the Missouri valley to Jefferson City. Between St. Louis and the Osage river, a distance of 140 miles, it is inland, and independent of the competition of the Missouri river. The country tributary to it would be much wider than that which could be made tributary to the Missouri river route, and its freight charges would yield a fairer return, and produce a safer and more regular income. The land, wherever improved, shows a capability of producing good crops, and its convenient position to St. Louis would render it valuable, and would cause it to be rapidly occupied, were a railroad present to carry off its surplus produce.

This route would pass through a portion of the Merrimac valley which abounds in ores of iron, and it would pass sufficiently near to the lead mines on the Bourbeuse ridge, and to many of those in Washington county, to render their working very profitable. There are two iron furnaces now on the Merrimac, near the mouth of the Bourbeuse river, one in operation belonging to Messrs. Evans, Nicholls & Co., and the other ready to go into operation belonging to Mr. J. Small. The cost of transportation of the pig metal from the first mentioned furnace to St. Louis, when the roads are in good order, is as follows :

From the furnace to South Point Landing, on the Missouri river, $1 50 per 1,000 pounds, or per ton gross	$3 38
Storage at South Point	0 25
Transportation from South Point to St. Louis by steamboat, at 10 cents per 100 pounds	2 24
Cost from Moselle Works to St. Louis	$5 87

But when the roads are in bad order the cost is occasionally increased to $8 per ton.

The effect is, that when the roads are in a bad condition, the iron is allowed to accumulate at the works, and can only reach St. Louis at certain seasons of the year, at the price of transportation mentioned above. When the navigation is closed, the iron cannot be got to market except by teaming the entire distance to St. Louis, at great expense. Occasionally, advantage has been taken of rises in the Merrimac river, to float down iron in flat boats, but so far as I can learn, this has not been practiced to much advantage.

The line of railroad passes within a convenient distance of the Moselle works and of the Stella iron works, and for some twenty miles of the Merrimac valley it passes through lands abounding, as I am informed, in iron ore.

The cost of transportation, as given above, leaves so small a profit over, as to discourage the construction of any more furnaces unless the price of iron should rise considerably. The cost of transportation by railroad, at fair rates, for this description of freight, would be $1 50 per ton.

If the average cost of transportation now is taken at $6 per ton, and 75 cents allowed for carriage from the works to the railroad, the presence of a railroad would save these companies $3 75 on each ton of iron made. The saving in the transportation of lead would exceed this amount, because a larger portion of the lead is teamed direcly to St. Louis, at a greater average cost per ton.

The saving of $3 75 per ton in the carriage of the metals, and the further advantage of being able to forward them to market, at all times of the season, with equal facilty, would form inducements, it is believed, sufficient to lead to the erection of many new furnaces, both of lead and iron, and to bring into use much of the deposits of iron, hitherto unopened, which now form so much dead capital there.

The pig iron used at the different iron works in the city of St. Louis, during the past season, and obtained principally from the Ohio furnaces, amounted to 9,210 tons. The addition, during the coming season, of the consumption of

Mr. Harrison's new rolling mills, is estmated at 5000 tons, and the increased consumption from an increasing business, anticipated by the various furnaces on my list, gives an estimate for the next year's consumption of 15,000 tons. At 2000 tons of yield a year, for one furnace, this would create a market for eight furnaces.

All the bar iron sold now in St. Louis is obtained from other States and from abroad. The amount of iron which will find sale, bye and bye, in St. Louis, for the supply of the surrounding country, will prove of itself a very considerable market. The distance of St. Louis from the seaboard acts as a tariff of protection in its favor against foreign iron, to the extent of the cost of transportation from the coast. The iron furnaces in Ohio were mainly brought into existence by the facilities of canal transportation, created for their benefit and for the development of the other resources of that State. The same causes, viz: an easily accessible market and a fair profit, in great part due to that accessibility, will produce similar results for similar facilities, in the Merrimac valley. The lead mines, which are now worked in many places but superficially, will, under greater encouragements, be worked more carefully, and produce more abundantly. The establishments which grow up around iron furnaces and manufactories, employ a great number of persons, and afford a home market for all the farm produce of their neighborhood. They create a great deal of passenger travel for a railroad, and besides the tonnage which they send off, they receive considerable in merchandise for their own consumption. We can hardly overate the importance to St. Louis and to the State, of affording the mineral region of the Merrimac such railroad facilities, as will place its extensive deposits of iron ores in a position to be available to capitalists.

The survey made by Major Morell, in 1840, for a railroad to the Iron Mountain, passed through a country very rich in lead ores, and where numerous furnaces are now at work on a small scale; the expense and difficulty of transportation, here, as in the Merrimac valley, cramping their operations.

The length of road to be made from St. Louis to accommodate the above district of country, would be reduced upward of thirty miles by the construction of the Merrimac route. Such a road would connect with the Merrimac line opposite the mouth of Big river, and its entire tonnage would pass over your road for a distance of at least thirty miles.

A railroad from Springfield and the south-western counties would, if it pursued the most direct course to St. Louis, connect probably with this route on the Merrimac ridge. Such a road would pass near the Merrimac iron works, belonging to Wm. James & Co., and would accommodate the metallic deposits of lead, iron and copper on the Bourbeuse ridge and in the upper valley of the Merrimac.

At the Gasconade river, the Merrimac route would intercept a large part of the pine lumber which is now floated down the Gasconade and Missouri rivers to St. Louis. It would take all that was required for the upper country, and it would take much of what was intended for St. Louis, because the rafting of it on the Missouri river is attended with considerable loss. The Missouri river route would also take a portion of it at the mouth of the Gasconade; but a greater portion of the lumber intended for St. Louis, having got so far, would continue down the Missouri, than when intercepted higher up the Gasconade.

It seems plain that although the Merrimac river route does not present the shortest and best route for a railroad from St. Louis to Jefferson City, the interests which it assists and developes are so important, and promise such results, as to make it questionable whether, compared with the Missouri river route, it would not afford the safest return as an investment in the event of Jefferson City continuing to be a point on the road.

Two modes present themselves of combining, to a certain extent, the commercial advantages of the Merrimac river route and the mechanical advantages of the Missouri river route.

At Gray's gap, situated at the foot of Tucker's hill, on the Union ridge, there occurs a depression in the dividing ridge which can be taken advantage of either to carry a branch from the Missouri river route into the valley of the Merrimac, or to connect the Merrimac river route with the Missouri river route. The ridge, at this depression, is 225 feet above high water at St. Louis.

Looking upon a connection with the mineral region of the Merrimac as an essential part of your project, such a branch to the Merrimac valley forms a necessary appendage to the Missouri river route, and becomes an addition to its cost.

The following would be the cost of the Missouri river route, with this addition, estimating the branch at such an average as our knowledge of the country enables us to apply:

	Miles.	*Dollars.*
1st. Estimate to Jefferson City, as already given..	121.87	2,989,757 00
2d. Branch from a point, 42 miles from St. Louis, thence into the Merrimace valley, and thence up that valley to the crossing of the Bourbeuse river; 14 miles, estimated at $19,000 per mile, which is an average of the road within the Merrimac valley..........................	14	266,000 00
Total of Missouri river route, with branch,	135.87	3,255,757 00

By the second mode, the main route is supposed to enter the Merrimac valley from St. Louis, as already described, and to pursue that valley to a point 40 3-4 miles from St. Louis; thence it enters the valley of Brush creek, and continuing up it some four miles, diverges thence northerly into Gray's gap, and crossing the dividing ridge at this gap, connects with the Missouri river route at a point 42 miles distant from St. Louis; thence this route would pursue the Missouri river valley to Jefferson City.

At the point where the connecting line leaves the Merrimac valley, a branch is supposed to be continued up that valley to the crossing of the Bourbeuse river. This branch would form the commencement, as already mentioned, of a line continuing up the Bourbeuse ridge, accommodating the mineral deposits there and up the Merrimac, and the lumber trade of the pine region, and capable of extension gradually, with advantage, to the south-western counties.

By this last combination of routes, the broken country between the mouth of the Bourbeuse river and the mouth of Osage river, which is the occasion, principally, of the increased expense of the Merrimac route, and of much of its increased distance, would be avoided. This route, with its branch, would accommodate the interests of the Merrimac valley, as far as the Bourbeuse river crossing, equally with the "Merrimac river route," and it would, like that route, reduce the distance and cost of a line to the iron mountain, by thirty miles. It would, however, have the disadvantage of coming into immediate competition wih the Missouri river, between South Point and Jefferson City.

The cost and distance of the route is estimated as follows:

	Miles.	*Dollars.*
1st. 40.71 miles of the Merrimac valley route....	40.71	1,091,369 00
2d. Line diverging from the Merrimac route at 40 3-4 miles from St. Louis, passing through Gray's gap, and connecting with the Missouri river line at a point distant 42 miles from St. Louis on that line, 10 miles, at an average of $19,000..................................	10.	190,000
3d. The Missouri river line from this last point to Jefferson City..................................	79.87	1,863,934 00
	130.58	3,145,3 3 00
4th Branch diverging from the connecting link (2) at a point about 44 1-2 miles from St. Louis, and continuing up the Merrimac river, to the crossing of the Bourbeuse river, 9 1-2 miles at $19,000..............................	9.50	180,500 00
Total of main line and its branches.........	140.08	3,325,803 00

By this mode of reaching Jefferson City, (including the branches, without which either route is imperfect,) the difference would be, in favor of the Missouri river route and its branch, 70,046 dollars of cost, and 4.21 miles of length of road to be constructed.

I will repeat here the totals to Kansas, to show the effect on the cost and distance of the branch from the Missouri river route, and of the combination of routes by Gray's gap :

	A. By Merrimac, Jefferson, and Georgetown.	B. By Union ridge, Jefferson, and Georgetown.	C. By Missouri river, Jefferson, and Georgetown.	D. By Merrimac and Versailles.	E. By Union ridge and Versailles.	Combined route.
Totals as before	$6,368,181 00	$5,994,515 00	$5,605,084 00	$6,010,007 00	$5,651,101 00	By Merrimac, Missouri, Jefferson, and Georgetown.
The Missouri river line, with its branch............	......	......	5,871,084 00			
The Merrimac river, Gray's Gap, and Missouri river line, with its branch......	......	......	......	......	......	$5,941,850 00
Totals with $375,000 added for running stock.........	6,743,181 00	6,169,515 00	6,246,084 00	6,385,007 00	6,026,101 00	6,316,850 00
Distances as before – miles..	317 68	311 62	290 52	317 86	312 11	
The Missouri river line, with its branch (fourteen miles).........................	......	......	304 52			
The Merrimac river, Gray's Gap, and Missouri river line, with its branch (9½ miles.........................	......	......	......	......	......	308 65
The different lines, including the branches described.........................	317 68	311 62	304 52	317 86	312 11	308 65

It will be observed that the cost of the inland route to Kansas exceeds that of the Missouri river route and its branches by 138,923 dollars only, although the length of road to be made on the one exceeds, by 13½ miles, the length to be made on the other.

I will now advert to the business of the road, on its entire distance from St. Louis to the State line, and will compare shortly the opportunities in this respect, of the Merrimac river and Versailles route with those of the Missouri river route by Jefferson City and Georgetown.

The lower part of the Versailles route will accommodate and develop the same interests as the Merrimac river route. At the crossing of the Gasconade it will intercept the lumber business of the yellow pine country to better advantage than either of the Jefferson City routes which cross that river lower down. At this point, or in this neighborhood, it will receive the iron tonnage of the Merrimac iron works, until a commencement has been made of a railroad towards Springfield, which will better accommodate the upper sections of the Merrimac. That railroad would form a feeder to this as to the other routes. At the crossing of the Osage river, the freight floated down that stream would be received There would also be received there a certain tonnage of coal, from the coal mine now working there. From the crossing of the Osage to the State line, the route passes over a stretch of rich prairie country, whose extent and fertility cannot be sufficiently appreciated. The width of rich land in this region, for a length of 130 miles of road, which would become tributary to the railroad, would only be bounded by the distance on either side from which produce could profitably be transported on the common roads. The application of plank roads towards the South, the timber for which could be conveniently obtained by the railroad, would increase this distance. The whole of the upper portion of the State, through which the railroad passes, is so far distant from the river as to render the transportation of any surplus produce there unprofitable, unless when prices are very high. As a consequence, but a small fraction of these lands is improved, and the raising of stock forms the chief resource of the farmer.

The railroad will place these lands three-fourths nearer to St. Louis, at all seasons of the year, as respects time, than were they located at corresponding distances from St. Louis on the river; and it will enable the producer to sell all the surplus produce he can raise at a profit. It will, therefore, render these very fertile and wealthy lands more valuable to the settler, because accommodated, in all respects, better than the corresponding river lands.

In proof of this assertion, I ask attention to the following table, where the cost of railroad transportation is applied to the average prices of certain articles of produce in St. Louis, in November and December, 1849. The difference shows the price, which would remain to the farmer at different distances from St. Louis, to which he must add the consideration of every day access to that market. But the rapid increase in the population of the villages, which will follow the settlement of these lands, will create a home demand for a considerable amount of produce, and the existence of the railroad will admit of its easy transference from point to point. *See Table marked M.*

There are evidences of the existence of coal in this upper country on either side of our line, and it is excavated in small quantities at several points for smithy use. Whether there exist beds of it of sufficient thickness to render the working profitable, cannot be understood from the present openings, but the occurrence of a good working seam on the Osage river, warrants the expectation that valuable seams may yet be found west from it, within the range of this coal basin.

I add a tabular statement of the usual charges for passengers, and of the times occupied by passenger trains, for certain distances.

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Statement of usual Passenger Charges, and the Running Time of Passenger Trains.

	FIRST CLASS CARS.	SECOND CLASS CARS.	TIME OF RUNNING.			
			Accommodation trains.		Express trains.	
			Hours.	Min.	Hours	Min.
For 50 miles....................	$1.50	$1.00	2	30	1	45
For 100 miles..................	2.75	2.00	5	00	3	30
For 150 miles..................	3.75	2.10	7	30	5	15
For 200 miles..................	4.70	3.30	10	00	7	00
For 250 miles..................	5.62	4.00	12	30	8	45
For 300 miles..................	6.75	5.00	15	00	10	30

The bussiness of the Missouri river route by Jefferson and Georgetown will be conveniently looked at in two divisions: from St. Louis to Jefferson City, and from Jefferson City to the State line. Between St. Louis and Jefferson City, the general business character of the route has been already considered, and the modifications of which it is susceptible. Above Jefferson City the general course of the Missouri river is about north-west for a distance of over 100 miles, while the direction of the railroad survey is about west. The position of this reach of the river, which can be best understood by reference to the map, will suggest its connection with the railroad here by a line of steamboats, running between Jefferson City and Brunswick, to meet the lines of the railroad trains. Such an arrangement would add greatly to the accommodation of this part of the river, and would be profitable alike to the steamboats and the railroad. The passengers would leave these boats at Jefferson and reach St. Louis thence in six hours.

Between Jefferson and the State Line, whatever route may be pursued the lands partake of the same character a those on the Versailles route, and are abundantly fertile. As the country becomes settled, their tonnage must grow to be very important. There is but little danger of any of that tonnage being transferred to the boats at Jefferson City, because the expense of rehandling it there would be objectionable.

As a matter of interest, in connection with river competition, I append a table of steamboat charges for certain articles of freight, between Boonville and St. Louis, with the railroad charge for a corresponding distance. It would have been interesting to have included other places in this table, but the returns, received in regard to other points, were not sufficiently complete to admit of this. The cost of insurance on the river, and the uncertainty attending its navigation, are considerations in favor of the railroad which cannot well be represented in the price per ton. *See Table N*º2.

The branch to Independence and Kansas forms so important an appendage to either of the routes to the State Line, that for the present, it may be considered as the main trunk of the road. By touching the Missouri river at Kansas, we add vastly to the accommodation of the entire valley of the Missouri river above Kansas. For all passengers from the upper Missouri proceeding to St. Louis, we reduce the time occupied on the journey, by two days, when the river is in a good stage of water. The time occupied in the transportation of freight is shortened in the same manner, and the more valuable freight *from* and *for* the Upper Missouri, would be carried by the railroad. The increased accommodation would have its effect on the population, and until the river should be touched at St. Joseph by the Hannibal and St. Joseph railroad, and until that railroad formed a connection with St. Louis, the travel for the lower Mississippi and much of the freight would, for its own advantage, take the railroad at Kansas for St. Louis The travel and freight from St. Louis for the upper Missouri would, probably, under all circumstances, proceed more conveniently by your road than by any other. To touch the river at Kansas, therefore, is to connect with and tap a stream of business, already in existence, and whose present rapid development will receive a fresh impulse from the railroad. To run to Independence and Kan-

e opening of the Rail Road, not taking iron and lead ores
Road.

Estimated average. Value in 1855.		AGGREGATES.		
er Acre.	Totals.	Extent estimated Acres.	Present Value.	Value in 1855.
$30,00	$3,072,000			
20,00	3,456,000			
12,00	3,072,000.			
5,00	1,500,000			
	11,100,000	831,200	6,212,000	11,100,000
10,00	1,152,000			
4,00	691.200			
3,00	864,000			
2,00	900,000			
	3,607,200	1,026,000	1,447,000	2,364,800
4,00	460 800			
3,00	504,000			
2.00	560,000			
1,50	840,000			
	2,364,800	1,123,200	1,404,000	2,364,000
5,00	560,000			
4,00	672,000			
3,00	840 000			
2,00	1,120,000			
	3,192,000	1,120,000	1,454,000	3,192,600
6.00	729,600			
5,00	912,000			
3,00	912,000			
2,00	1,216,000			
	3,769,600	1,216,000	1,580,000	3,769,600
10.00	1.184,000			
6.00	1 065,600			
4,00	1.152,000			
2,00	1,024 000			
	4,425,600	1,096,000	1,541,600	4,425,600
		6,412,400	13,638,600	28,458,800
		Difference,............		$14,820,200

sas, is also to come into safe competition with the river for the travel which seeks these points on its way to Santa Fe, the Salt Lake, the upper Forts, California and Oregon, and for much of the tonnage which is created by that travel.

The following table has been prepared to give an idea of the aggregate increase in the value of the lands in the neighborhood of the railroad, after it is in operation. The allowance for increase of value per acre, will probably at most places be much exceeded: the aggregate increase as estimated on this table, exceeds **$14,000,000.** See table P.

I submit an estimate of the business of the road after it is open throughout and fairly in operation, which some attention to the sources of business, now so imperfectly developed, has induced me to prepare. It refers to the inland route. Should the road be made by the Missouri river and Jefferson City, the steamboat connection suggested there between Brunswick and Jefferson City may compensate, in a degree, for the effects of river competition below Jefferson.

STATEMENT,

Illustrative of the probable amount of Annual Business on the Inland Route of the Railroad, the Second Year after the Road is finished throughout:

1st.—*Freight.*

Tons.		*Price.*	*Amount.*
30,000	tons freight of agricultural produce and stock from the various country 'way stations' to St. Louis, and of merchandise from St. Louis to the same stations; average distance 150 miles; average price.........................	3.75	112,500 00
	Allowing, that, of the land tributary to the road, an amount equal to 10 miles in width on either side, will be occupied shortly after the road is open, and that one-third of this occupied land will be improved, the amount of 30,000 tons will be equal to five tons of produce for each square mile of this one-third.		
	Amount carried forward,..................		$112,500 00

	Amount brought forward,................		$112,500 00
10,000	tons coal delivered at St. Louis, from collieries in St. Louis county at....................	.25	2,500 00
	This estimate looks to those pits only which the line will pass near enough to accommodate. The returns given me of coal sold at the pits during 1849, amount to 118,006 tons, and the cost of transportation varies according to the distance of the pit from St. Louis, as follows: 50 cents, 92 cents, $1 00, $1 12, and $2 00 per ton,		
20,000	tons iron from ten iron furnaces on the Merrimac, distant, on an average, 70 miles from St. Louis, at..	1.50	30,000 00
	There are now three furnaces on the Merrimac — two in operation. and one ready to commence. The saving, in transportation, to the nearest furnace, will be $3 75 per ton. The ore is in large quantities distributed over a distance of upwards of fifty miles, and I have supposed ten furnaces to be in operation within the next six years, producing at the rate of 2000 tons each annually. which is said to be the average of the Ohio furnaces.		
4000	tons lead and copper, from 24 lead and two copper furnaces on the Merrimac and in Washington county; average distance hauled on the railroad 70 miles, at......................	1.50	6,000 00
	These furnaces are estimated to yield now 2,200 tons.		
3000	tons of merchandise from St. Louis to the above iron and lead furnaces, at an average of..	2 10	6,300 00
3000	tons freignt from Springfield and the S. W. counties to St. Louis and v. v., connecting at a point about 80 miles from St. Louis, at an average of......................................	2.20	6,600 00
8000	pine lumber received at the Gasconade river for St. Louis and for the country west of the Gasconade, at say................................	2.50	20,000 00
	The number of saw mills in operation on Piney river are variously stated at from 15 to 22, two of which are steam mills.		
	Amount carried forward,.............		$71,400 00

	Amount brought forward.............		$71,400 00
	The price paid for rafting to St. Louis is 50 cents per 1000 sq. ft. or $5 00 per thousand. Assuming 18 mills to be at work 250 days of the year, at 2000 square feet per day, the amount will be 9,000,000 square feet, equal to about 10,000 tons. The additional facilities afforded by the railroad will increase the demand.		
2000	tons freight, in part received from the Osage river, and in part coal received there for distribution west, hauled from 140 to 50 miles, say 100 at average of....................	3.00	6,000 00
10,000	tons of produce and merchandise to and from Independence and St. Louis, as per returns of present trade at average of..............	8.00	80,000 00
5000	tons, do., to and from Kansas and St. Louis, and Westport and St. Louis, at average of..	8.00	40,000 00
8000	tons freight received from upper Missouri (from Kansas upwards) for St. Louis, at an average of..................................	8.00	64,000 00
7,000	tons freight of merchandise, salt, wagons, &c. from St. Louis to Kansas, for upper Missouri, Santa Fe, Salt Lake, and California route at an average of..........................	8.50	59,500 00
4,000	tons government freight to and from St. Louis and Kansas at an average of..............	8.00	32,000 00
4,000	tons local freight, passing between the various country stations, independent of that forwarded to St. Louis or Kansas—average distance hauled, say 40 miles............	1.20	4,800 00
118,000			470,200 00

2d. Passengers.

10,000	passengers yearly, moving on the first 5 miles from St. Louis at an average of...........	.10	1,000 00
4,000	passengers, to and from Manchester, being about six per day, either way............	.60	2,400 00
18,000	passengers to and from the iron and lead establishments on the Merrimac and in Washington county, being about 30 per day either way, for ten iron establishments and twenty lead furnaces, distance 70 miles....	2.00	36,000 00
32.000			509,600 00

32,000	Amount brought forward,		$509,600 00
3,800	passengers to and from Springfield road connection, being about 6 per day from Springfield and the south-west counties to St. Louis and v. v.; average distance 70 mile	2.00	7,600 00
38,000	passengers from the different country stations to and from St. Louis, being an average of 2 per day each way from 30 principal stations; average distance 150 miles at	3.75	142,500 00
40,000	local or way passengers, traveling from country station to country station, being about 3 per day to each station, traveling an average distance of 50 miles	1.50	60,000 00
4,400	passengers from the villages of Independence, Kansas and Westport to St. Louis and v. v., being about seven passengers per day each way, for the three places at	6.75	29,700 00
3,800	passengers received at Kansas by steamboats from the upper Missouri for St. Louis and delivered at Kansas from St. Louis for the upper Missouri, being at the rate of about six passengers per day either way at	6.75	25,650 00
4,000	way passengers received at Kansas from the upper Missouri for points on the railroad between St. Louis and Kansas, and v. v., being at the rate of about six passengers per day, either way traveling an average of 75 miles, at	2.00	8,000 00
2,000	Passengers connected with the army, to and from St. Louis at an average of	6.00	12,000 00
15,900	Passengers for Santa Fe, Salt Lake, California and Oregon, and v. v., at	6.75	101,250 00
143,000			
	300 miles of daily mail service at the average rate paid now for both ways	56.00	16,800 00
	Receipts for "express service"		15,000 00
			928,100 00
	Expenses 50 per cent		464,050 00
	Earnings		$464,050 00

The amount of short tonnage, and the number of passengers traveling short distances, will, as the country is occupied, assume much larger proportions than here stated.

It will be interesting to compare this estimate with the present business of the Missouri river, and I have taken some pains with but imperfect success to ascertain this, as some index to the proportions which the freight and passenger business would assume under the increased facilities of transportation for every day of the year which the railroad will furnish.

The amount of tonnage from the Missouri river, received at St. Louis by steamboats, between 1st November, 1849 and 1st November, 1850, as collected by me from the published manifests of these boats was...............	37,174 tons
Add for articles not manifested and for receipts by flat boats 1–30..	1,239 "
	38,413 tons.

The captains of boats and certain merchants, who have been consulted, estimate the gross freight down stream as worth an average of from 25 to 30 cents per 100 lbs., and the freight up stream as worth an average of 40 cents per 100 lbs., and they agree generally that, although the tonnage up stream is much less than down stream, the amount of money collected is about the same. The average freight charges on the several articles of the manifests, as furnished us at St. Louis for each month of the year, give, when applied to the receipts, an average, exceeding 30 cents per 100 lbs. for the down freight, while the average rate of charges, as they are stated by merchants, residing up the river, gives an average less than 30 cents, viz., 26⅔ cents. The average of 30 cents will be between the two statements. This price for the above tonnage, gives

38,413	tons at $6 per ton gives............................	$230,478
	If 40 cents per 100 lbs. is taken as the average for up freight, its value in tons will be 27,500, being a little more than one-third of the up freight tonnage.	
27,500	tons at 40 cents per 100 lbs. = $8 per ton, say........	220,000
65,913		$450,478

This amount of 65,913 tons is then the tonnage on the Missouri river, so far as I can ascertain it from the records, and it is a tonnage due to seven months of tolerable navigation, and three months of very indifferent navigation. During the remaining two months of winter, the river may be considered as closed.

There were 374 trips of steamboats made during the last season, including 46 short trips of the Fayaway to St. Charles. This, for the tonnage which we have gathered from the manifests, (viz: 65,913 tons,) gives 176 tons per trip. Following the proportions given above, it gives 103 tons as the average for the passage down stream, and 73 tons up stream, amounts which have the appearance of being below the reality.

The amount allowed for railroad tonnage includes three important items not applicable to the river tonnage of the Missouri, viz: that resulting from the item for transit of pine lumber from the Gasconade river; from the item for the tonnage of the iron and lead establishments anticipated to be erected by the reduction of the cost of transportation; and from the item for the carriage of coal from the collieries in the vicinity of St. Louis. These three items embrace 45,000 tons, leaving 75,000 tons derived from sources similar to the tonnage of the river.

It is difficult to ascertain, with any precision, the number of passengers on the Missouri river for the past season of 1850. The number of trips made by steamboats on the river, during the season of 1850, is 374, including 46 short trips of the steamer Fayaway. We have the number of trips made by five boats now in port, with their passenger receipts for the season. The number of trips were 47, and the average receipt for passengers per trip $1,432 00. If we take the average fare paid at $5 00, the result will be 246 passengers per trip. Say 230, and take the number of trips made at 320, and we have 73,600 passengers for both ways. The California travel during the year 1850 was doubtless considerable.

The number of passengers moving on the railroad when opened, has been estimated at 143,000. Of this amount 14,000 is due to short distances from St. Louis, a kind of travel not at all accommodated on the river, and 18,000 is allowed for travel connected with the iron and lead establishments. This leaves 121,000 from other sources, an estimate which, when we compare the accommodations afforded, and consider the effect of such accommodations on travel every where, will be found to be exceedingly reasonable.

It will be observed that in my estimate of the business of the road I have made but a small allowance for passengers to Kansas destined to Santa Fe, Fort Laramie, and the Salt Lake, and for that emigration to California and Oregon, which, for three seasons back, has been so extensive. Those who have traveled over the ground which the routes surveyed this season traverse, and who are familliar with the metallic districts which the road may be made to accommodate, will comprehend the sufficiency of these various resources within the State, to sustain, when developed, your railroad, independent of any business which may hereafter accrue to it in connection with a railroad across the continent.

It will not be irrelevant, in this report on the first railroad to be commenced in the State of Missouri, to allude to the effects which invariably follow their construction where the country through which they pass possesses valuable unapplied capacities of improvement, whose results can be brought, by the construction of a railroad, within reach of such a market as will admit of ready sales being effected at remunerative prices.

I have already given such a table of the cost of transportation on railroads as will enable the farmer to understand very nearly what he can realize for his surplus produce, and will show the iron manufacturers on the Merrimac the great difference in their favor in the cost of transportation by railroad, as compared with the present mode of conveyance. All these charges admit of being reduced, as the gross amounts of freight to be carried increase. The prompt connection with a market at all seasons of the year, and such a moderate charge for transportation as insures a fair profit to the producer, are the two principal elements which render railroads so creative of population and wealth, and so remunerative to the stockholder and to the landholder, to the latter in a greater ratio indeed than to the former.

That branch of railroad statistics, which would be applicable at this stage of your enterprise, is very incomplete. I allude to the tonnage and passenger business of the districts of country through which the leading railroads are built, before these roads were commenced as compared with that business after they were in full operation. But little attention has been paid to the preservation of this information, apparently because with very few exceptions, the effect has so far exceeded the calculations of even the sanguine friends of such enterprises, as to satisfy all that the small business of a country, with no opening to a market, forms no criterion of what that business will become with easy access to a market.

The western railroad between Boston and Albany was constructed for the benefit mainly of the commerce of Boston, and with little expectation that it would realize so soon, fair dividends to its stockholders. The Fitchburg railroad did not terminate, like the western railroad, at an important commercial point, but was dependent entirely on the local resources of the country through which it passed.; The immediate development of these has made it one of the most successful roads in Massachusetts. The New York and Erie railroad is not yet open to Lake Erie, and derives its present business mainly from the rich agricultural country through which the larger portion of it passes. Its receipts, this season, exceed the estimate of its most sanguine friends, and its success will largely encourage similar enterprises.† The Baltimore and Ohio railroad has not yet reached the Ohio valley, and has been thus far sustained by the local business which accumulates upon its route. The vigorous prosecution of that road, notwithstanding the very great expense attending its construction across the mountains, shows the confidence which those interested in it, have of its ultimate success.

A line of railroad possesses, by virtue of its being under the control of one body, (and independent of the facilities which its mechanical superiority over any other mode of communication affords,) a power to assist in the development of a country, or of a particular branch of industry, which is some times exercised with great success, and most beneficially for the object to be encouraged, and for the ultimate income of the railroad.

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†This route is now open to Lake Erie. 1st May, 1851.

It is in this sense that a railroad can for a time afford to carry certain articles of freight at prices which barely pay the expense of carriage, or which may be less than the cost of carriage. This may occur frequently when these articles are the raw material, on which important branches of business (manufacturing or otherwise) depend, situated on the same line of railroad, or so connected with it as to benefit it importantly by their development. Iron ore may be abundant in one place, and the coal which is necessary to its reduction may have to be brought from some distance. The railroad can afford to carry this coal for less than the cost of transit, if thereby, the iron ore will be brought into use, and furnaces and forges erected, leading to an active population, and to other descriptions of freight which will pay the railroad fair prices. The railroad can also afford, as it has done, to carry lumber, farm produce in quantities, and the leading staples of a country at barely paying prices, if thereby the country becomes settled by an enterprising population, which develops, as a matter of course, new branches of industry, increases importantly the passenger traffic of the road and its freights of merchandise and light goods, and ultimately render the staple freights so large as to make rich returns at the very low prices which, with the original small quantities to be moved, produced no profit.

No other description of communication can act with so much unity of interest as to bring this power importantly into play. On the common road, macadamized road, or plank road, every wagon receives its seperate profit, and the stage cannot practically so control the heavy teams as by reducing the charges of the last to a mininum, to seek an increase in the amount of its own business. On the river nearly every steamboat is owned and controlled by separate and jealous interests, and no similar power comes into play except competition, which may run down the prices of transportation low at one season of the year, but does so without any intelligent object in view, and trusts to make up for the low profits then, by charging exhorbitantly at some other time, when the absence of competition or an abundance of freight gives it the power to do so.

On the canal, the principle to which I have alluded can be brought into play so far as the tolls are concerned, and doubtless, has been with benefit to the entire country through which the canal passes, but the boats upon the canals belong to individuals, and the cost of transportation there, as distinguished from the canal tolls, cannot be brought under the control of the same general principle. The railroad is the only kind of communication, which, all the parts acting in unity and having a common interest and a common head, can with a sound intelligence and for the best interests of its stockholders and of the State, assist importantly in the development of certain branches of business, with the certainty that any improvement in the circumstances or means of the industrial part of the population of the country, through which it passes, must be reflected ultimately advantageously upon itself.

The city of Boston forms a prominent example of the influence of extensive railroad facilities prudently applied, in fostering enterprise and creating wealth. The railroads, which have been made during the last twenty years in Massachusetts, have derived the capital necessary for their construction chiefly from the city of Boston, and the returns, in dividends, for these investments form but a small portion of the benefit which has resulted thence to that city. There is no navigable river at Boston to complicate our clear perception of this result, and the surrounding country is connected with the city, and all its resources brought under contribution solely by means of these artificial communications.

The following table (marked R.) for which I am indebted to Mr. John A. Haven, of Boston, gives an interesting exhibit of its progress in population and wealth during the last thirty years, and shows also the amounts of railroad, constructed during that time. It is worthy of remark that in 1835 the population of Boston was about the same as that of St. Louis at this date.

R.

Population and Valuation of Boston, from 1820 *to* 1850, *inclusive.*

YEAR.	POPULATION.	VALUE OF REAL ESTATE.	VALUE OF PERSONAL ESTATE.	TOTAL VALUATION.	No. of miles of railroads opened in each year.
1820	43.298	21.687.000	16.602.200	38.289.200	
1825	58.277	30.892.000	21.450.600	54.442,600	
1830	61.392	36.960.000	22.626.000	59.568.000	
1831		37.675.000	23.023.200	60.698.200	
1832		39.145.200	28.369.200	67.514.400	
1833		40.966.400	29.510.800	70.477.200	
1834		43.140.600	31.665.200	74.805.800	53
1835	78.603	47.552.800	31.749.800	79.302.600	70
1836		53.370.000	34.895.000	88.245.000	23
1837		56.311.600	33.274.200	89.583.800	10
1838		57.372.400	32.859.200	90.231.600	31
1839		58.577.800	33.248.600	91.826.400	54
1840	93.383	60.424.200	34.157.400	94.584.600	77
1841		63.963.300	36.043.600	98.006.600	125
1842		65.499.000	41.223.800	105.723.700	30
1843		67.673.400	42.372.600	110.056.000	16
1844		72.048.000	46.402.300	118,450.300	32
1845	114.366	81.991.400	53.957.300	135.948.700	122
1846		90.119.600	58.720.000	148.839.600	78
1847		97.767.500	64.595.900	162.360.400	105
1848		100.403.200	67.324.800	167.728.000	171
1819		102.827.500	71.352.500	174.180.200	79
1850	138.788	105.093.400	74.907.100	180.000.500	54
					1130

"The valuation of the towns and cities within nine miles of Boston, amounts to about $267.000.000—a gain in ten years of over one hundred and three per cent. These towns are, in fact, a part of the city of Boston, her capital creating their business and her business men residing there. These towns and cities have a population of about 293,000 persons. The public and corporate property in Boston and environs, not included in the above assessment, exceeds $21,000,000. Boston capital has built and owns railways in New Hampshire, Vermont, Michigan, Ohio, North Carolina, Delaware, Pennsylvania, Maine and other States. Her capital, invested in railways, amounts to over $50.000.000. Her capital is likewise largely invested in manufacturing and other enterprises throughout the United States, besides doing a very large share of the Canton and East India trade of the whole country. The annual returns upon these investments of Boston capital, amounts to over $25,000,000."

The following table of States, in the preparation of which, as well as of many of the others, I have been importantly assisted by Mr. O'Sullivan, shows the correspondence of density of population with facilities of communication. This effect and progression is shown very markedly there in the cases of the States of Massachusetts and Ohio.

The table shows a rapid increase of population in the western States with but a small population, however, per square mile, when compared with the middle States. The construction of the lines of railroad now going on and projected, away from the rivers, will offer new opportunities to settlers, and will tend to insure a continuation of that rapid advancement, which has hitherto characterised the western States.

The surveys to the west of the Osage river were conducted by Mr. Thomas L. O'Sullivan, those between the Osage and St. Louis, with the exception of the Missouri river route, by Mr. W. R. Kingsley, and the survey of the Missouri river route by Mr. W. R. Singleton.

I have to acknowledge my indebtedness to these gentlemen, and to the junior assistants of their several parties for the industry with which they have fulfilled the duties entrusted to them.

In my examinations of the country I have to acknowledge my obligations to Mr. Samuel Massy, whose local knowledge of certain districts was very freely communicated. To many other gentlemen, resident on the several routes, I am indebted for similar assistance.

To Major M. L. Clark, Surveyor General, I am under great obligations for the facilities afforded me in consulting the land maps of the counties affected by our surveys.

Which is respectfully submitted by

JAMES P. KIRKWOOD.

N^3

Steamboat Arrivals at St. Louis, from 1847, '48, '49, '50.

	1847	1848	1849	1850
From New Orleans	502	424	313	303
From Ohio river	430	429	401	493
From Illinois river	658	690	686	788
From Upper Mississippi	717	697	806	635
From Missouri river	314	327	355	390
From Cairo	146	194	122	75
From other points	202	396	217	215
	2969	3159	2900	2899

Statement showing the periods undermentioned, togeth

Square miles of surface.	Miles of Sea Coast, Bay and Lake.	1 8 2		1 8 4 0.					
		POPULATION.		POPULATION.		FACILITIES OF INLAND COM			
		Increase per cent. since 1810.	Amount per square mile.	AMOUNT.	Increase per cent. since 1830.	Navigable rivers. Miles.	Canals. Miles.	Rail Mil	Population per
46,000	360	431	29.82	2,428,921	26.2	462	640	45	.2
44,000	30	29.5	23.8	1,724,033	27.9	81	954	57	.5
39,970	184	152	14.9	1,519,467	62.0	472	744	3	.4
64,000	180	09.3	16.6	1,239,797	02.3	549	216	34	.3
41,300		61.5	10.2	829,210	21 6	111			.7
40,500		38.8	13.6	779,828	13 3	775	2	3	.7
43,800	300	15	14.6	753,419	02.1	120	13	24	8
7,800	224	10.9	67.3	737,699	26.8		89	27	5
58,000	110	35.1	5.8	691,392	33.8	559	28	21	1
33,800		500.2	4.3	685,866	99.9	779	150	2	2
30,000	220	18.1	16.7	594,398	02.3	133	52	13	
50,700	76		2.5	590,756	90.8	814	52	5	
32,000	359	30.4	9.3	501,793	26.2	30	210	1	
55,400	50	349.5	0.9	476,183	202.4	1170		2	
10,900	151	07	37.4	470,019	05.1	100	136	27	
67,400		219.5	0.9	383,702	173.2	870			
47,100	100	87	1.6	375,651	175	844		5	
6,900	188	13	40.2	373,306	16.3	101	142	19	
46,400	422	100.4	3.3	352,411	63.3	883	14	6	
4,700	115	05	58.5	309,078	4.1	40	36	9	
10,200		08.2	23.1	291,948	4	128	1		
9,300	20	30.4	26.2	284,574	25.6		11	1	
56,200	770	86.8	0.2	212,267	570.9	50		11	
1,360	40	07.8	61.0	108,830	11.9	25	11	4	
52,200			0.3	97,574	221.1	1143			
2,100	83	0.1	34.6	78,085	1.7	40	14	1	
59,300	1,000			54,477	56 8	94		5	
50,900				43,112		318			
53,900	200			30,945		288			
1,066,130	5176	33.35	9.05	7,069,453	32.67	10,979	3,326	3,3	